Claims:

1. A method of estimating frequency offset, comprising the steps of:

receiving a sequence of signal samples which are complex numbers;

delaying said signal samples by a first delay value;

performing multiplication between each said signal sample and a complex conjugate of each said delayed signal sample to generate a first value;

delaying each said first value by a second delay value;

accumulating said first value to generate a second value;

subtracting each said delayed first value from said second value to generate a third value; and

generating said estimated frequency offset based on said third value.

2. A method of claim 1, wherein said second delay value is larger than said first delay value.

3. A method of estimating frequency offset in a receiver, comprising the steps of:

receiving a first portion of signal samples which are complex numbers;

receiving a first control signal;

deriving a first frequency offset estimation based on said first portion of signal samples;

receiving a second portion of signal samples which follows said first portion of signal samples;

compensating said second portion of signal samples by utilizing said first frequency offset estimation so as to generate a compensated second portion of signal samples;

deriving a second frequency offset estimation based on said compensated second portion of signal samples; and

obtaining a total frequency offset estimation based on said first frequency offset estimation and said second frequency offset estimation.

4. A method of claim 3, wherein the first frequency offset estimation keeps constant after said first control signal is active.

5. A method of claim 3, wherein the step of deriving said first frequency offset

estimation comprises the steps of:

delaying said first portion of signal samples by a first delay value;

performing multiplication between each said signal sample and a complex conjugate of each said delayed signal sample to generate a first value;

delaying each said first value by a second delay value;

accumulating said first value to generate a second value;

subtracting each said delayed first value from said second value to generate a third value; and

generating said estimated frequency offset based on said third value.

6. A method of claim 5, wherein said second delay value is larger than said first delay value.

7. A method of claim 3, wherein the step of deriving a second frequency offset estimation comprising the steps of:

delaying each of said partial compensated second portion of signal samples by a third delay value;

performing multiplication between each said partial compensated signal sample and a complex conjugate of each said delayed partial compensated signal sample to generate a fourth value;

accumulating said fourth value to generate a fifth value;

generating said second frequency offset estimation based on said fifth value.

8. A device of estimating frequency offset in a receiver receiving an analog signal, said device comprising:

an analog-to-digital converter for converting said received analog signal to a sequence of sampled elements;

a first storing means having M elements that sequentially stores said sampled elements, for delaying each said sampled elements by M samples to generate a delayed sampled element;

a multiplication means for performing multiplication between a complex conjugate of said delayed sampled element and a current sampled element;

a second storing means having N elements that sequentially stores an output of said multiplication means, for delaying each said output of said multiplication means by N samples;

an accumulating means for accumulating said output of said multiplication means; and

a subtracting means for sequentially subtracting output of said second storing means from output of said accumulating means;

an estimating means for generating said estimated frequency offset based on an output of said subtracting means.

9. A device of claim 8, wherein the value of N is larger than the value of M.

10. A device of estimating frequency offset in a receiver receiving an analog signal and converting said analog signal to a series of signal samples which are complex number, said device comprising:

first deriving means for deriving a first frequency offset estimation based on a first portion of said signal samples;

compensating means for compensating a frequency offset of a second portion of said signal samples which follows said first portion of signal samples by utilizing said first frequency offset estimation so as to generate a compensated second portion of signal samples;

second deriving means for deriving a second frequency offset estimation based on said compensated second portion of signal samples;

estimating means for computing a total frequency offset estimation based on said first frequency offset estimation and said second frequency offset estimation.

11. A device of claim 10, wherein the device further receives a first control signal, and said first frequency offset estimation keeps constant after said first control signal is active.

12. A device of claim 10, wherein the device further receives a second control signal, and said second frequency offset estimation keeps constant after said second control signal is active.

13. A device of claim 10, wherein said first deriving means for deriving a first frequency offset estimation comprising:

a first delaying unit having M elements for delaying each of said first portion of signal samples by M samples to generate a delayed signal sample;

a multiplication unit for performing multiplication between each said signal sample and a complex conjugate of each said delayed signal sample to generate a first value;

a second delaying unit having N elements for delaying each said first value by N samples to generate a delayed first value;

an accumulating unit for accumulating said first value to generate a second value;

a subtracting unit for sequentially subtracting each said delayed first value from said second value to generate a third value; and

an estimating unit for computing said first frequency offset estimation based on said third value.

14. A device of claim 13, wherein the value of N is larger than the value of M.

15. A method of claim 10, wherein said deriving means for deriving a second frequency offset estimation comprising:

a delaying unit for delaying each of said partial compensated second portion of signal samples;

a multiplication unit for performing multiplication between each said partial compensated signal sample and a complex conjugate of each said delayed partial compensated signal sample to generate a fourth value;

an accumulating unit for accumulating said fourth value to generate a fifth value; and

an estimating unit for computing said second frequency offset estimation based on said fifth value.